ROTARY HEAD method of milling

model D

KEARNEY & TRECKER MILWAUKEE MACHINE TOOLS
ROTARY HEAD
Base graduated in degrees from 0 to 360... outer periphery of head fitted with adjustable trip dogs for control of milling arcs and radii under power feed. Handwheel replaceable by index plates and crank (extra-cost — see Page 4) for precision indexing of head.

SPINDLE CROSS SLIDE
Precise manual adjustment of spindle from 0 to 4" off center in thousandths of an inch... slide ways are precision scraped for absolute accuracy... precision ground screw and micrometer dial. Double tapered gibs provide a positive method of centering spindle with rotary base at all times.

SPINDLE AND QUILL
Spindle accepts No. 30 taper collets for straight shank tools ½" thru ¾" diameter. Quick change unit included for use with No. 30 quick change /20 collet holder with less than ½" capacity. Quill provides 3" of vertical travel-hand or power feed. More than 75% of quill is supported in the spindle block at all times.

VERTICAL POWER POSITIONING
Individual power source for raising and lowering the knee — easily and smoothly — at 30 inches per minute. Power positioning of the knee reduces setup time... increases machine productivity.

ROTARY HEAD FEED
Motor and gear box form single unit... individual ¼ hp motor provides power for 16 quick change feeds — from ½ to 3 rpm to rotary head... full power for full time operation.

TABLE FEED
Individual ¼ hp motor — provides full power to the 16 table feed movements, ranging from ½ to 7½ inches per minute. Motor and change gear box form single unit.
CHERRYING ATTACHMENT
By combining the circular and angular movements of this attachment with those of the machine head, spherical and conical shapes can be milled. The attachment makes possible the milling of arcs and angles from 0 to 360° in the vertical plane. Maximum cherrying cut is 2" diameter, plus diameter of cutter.

UNIVERSAL ATTACHMENT
Spindle driven, the universal attachment can be offset 4" relative to the machine spindle. This extends the planetary range up to 16" diameter. It is adjustable radially to mill any angle within a complete circle and has 1½" of spindle quill adjustment.

RIGHT ANGLE ATTACHMENT
This unit is extremely useful for light horizontal milling inside cavities and for any other operations which require milling at right angles to the machine spindle. It can be used in combination with rotary head motion and has 2" of vertical adjustment.

ATTACHMENTS AND ACCESSORIES
(Available at extra cost)

DIVIDING HEADS
10" and 12" SIZES . . . 5 to 1 index ratio . . . No. 50 taper spindle. Exclusive worm and worm wheel construction eliminates backlash. Uniform accuracy under all load and no-load conditions.

ROTARY TABLES
10" and 16" SIZES . . . handwheel and graduated dial or index plate and crank type. Excellent for dividing purposes or can be combined with machine movements for generating many shapes unobtainable with conventional methods. Power feed is available (Power Feed Drive Bracket).

COLLETS AND END MILLS
Ten spring collets and twenty-seven straight shank end mills — packed in fitted cabinet-type box. Carefully selected to assure the right cutter for the right job at the right time. Set of ten collets only, also available.

PLAIN AND SWIVEL VISES
Available in four sizes, 6", 7", 8" and 9", these vises provide a simple, yet accurate method of holding the workpiece and in many instances, eliminate the need for expensive jigs or fixtures. The swivel base is graduated thru 360° and can be removed when not required.

SUPER DRILL CHUCK
Heavy duty key type . . . accommodates tools up to 1½" shank size. Chuck shank is tapered to fit directly in machine spindle.
SLOTTING ATTACHMENT
Slotting and cornering operations are performed by this attachment which has a controlled stroke of 1½". Drift can be set up to 7 degrees. Cam action permits slotting to blind bottoms and breaking off the chip at the end of the stroke — thus minimizing hand work.

ROTARY HEAD INDEXING
The indexing unit is interchangeable with the rotary head handwheel and graduated dial, enabling the operator to accurately divide and space holes, flanges, gear teeth, slots, etc.

POWER FEED DRIVE BRACKET
This unit provides power feed to the rotary table and dividing head attachments being used to perform rotary and radial milling operations requiring rotary motion.

MEASURING RODS AND INDICATORS
To secure greater accuracy in measuring, this set of measuring rods and dial indicators can be used in conjunction with the steel scales for both longitudinal and transverse movements. Fitted box is included.

WORKHOLDING SET
Includes U-clamps, T-nuts, coupling nuts, hexagon studs, hexagon nuts, washers, set of step blocks in fitted box and a double end wrench.

BORING BARS
For No.3 offset boring head. Set of four, with 3/8" diameter shanks. Six high speed steel bits for each bar. Includes hex wrench and container block.

OFFSET BORING HEAD
No. 3 — with No. 30 taper shank... fits directly in machine spindle. 3/8" shank boring bar capacity. Maximum hole diameter is 6".
THE PRINCIPLE OF

ROTARY HEAD method of milling

ROTARY HEAD MILLING
... the method... the principle
The rotary head METHOD of milling is the precise control of the cutting element to provide straight, angular and radial movements in both the horizontal and the vertical planes.

The PRINCIPLE of the rotary head method of milling is the ability of the machine to duplicate directly in metal, and without the aid of templates, any GEOMETRIC shape that can be developed with basic drafting instruments... and all in a single setup.

The spherical and conical shapes integrally a part of the die block shown on this page, are generated with the combined use of basic machine movements and the cherrying attachment (extra cost — see Page 3).
There's a **KEARNEY & TRECKER MAN** near you!

### GENERAL SPECIFICATIONS

**TABLE:**
- Working Surface — Size overall ........................................... 30" x 16"
- T-slots — number and width ................................................... Three-11/16"
  — center distance ............................................................... 21/2"
- Back edge of table to center of first T-slot ............................. 51/4"

**TABLE FEED RANGE:**
- Longitudinal table travel — Hand or power* feed ......................... 18"
- Transverse table travel — Hand feed only ................................. 12"
- Vertical table travel — Hand feed only .................................. 18"
- Number of table feed changes — geometrical progression ............. 16
- Feed range — inches per minute .............................................. 1/8" to 7/16"

**SPINDLE:**
- Size — National Standard Taper Hole (31/2" per foot) .................. No. 30
- Range of speeds (in either direction) ....................................... 250 to 4000
- Number of speed changes ..................................................... Infinite
- Number of feed changes — geometrical progression .................... 8
- Feed range — inches per revolution ........................................ 0002" to .008"
- Vertical adjustment by hand or power ..................................... 3/8"
- Radial adjustment .................................................................. 0 to 4/""

**ROTARY HEAD:**
- Number of power feed changes — geometrical progression ............. 16
- Feed range ............................................................................. 2 to 3
- Power and hand feed range — continuous .................................. 3000"/min

**POWER POSITIONING TO KNEE:**
- Maximum Travel at 30 ipm ..................................................... 18"

**MOTORS:**
- Rotary head drive motor ......................................................... 1/2 H.P.
- Spindle drive motor ................................................................ 3/4 H.P.
- Power table feed motor (extra cost) ......................................... 1/4 H.P.
- Coolant pump motor (extra cost) ............................................. 3/4 H.P.
- Air pump motor (extra cost) .................................................... 1/2 H.P.

**NOTE:** Complete electrical equipment — includes motors and controls for operation on 230 or 460 volt, 3 phase, 60 Hz alternating current wired in accordance with J.I.C. Electrical Standards for General Purpose Machine Tools: Orders must specify electrical current characteristics.

**SHIPPING DATA (Approximate):**
- Net weight ............................................................................. 4850 lbs.
- Shipping weight — domestic ................................................... 5300 lbs.

**STANDARD EQUIPMENT INCLUDES:** No. 30 National Standard taper spindle; quick change nut; collet nut; vertical power feed to spindle; power feed to rotary head; necessary trip dogs for all power feeds; steel scales graduated in tenths of an inch for longitudinal and transverse movements; necessary wrenches. All electrical equipment built into machine.

**EXTRA EQUIPMENT** — (Available at additional cost) — *Power feed to table; dial indicators; 24" logarithmic feed range; cutter coolant pump; air pump; coolant and air distributing system; and all attachments and accessories shown on Pages 3 and 4 of this bulletin.

**PATENT NOTICE:** The novel features of the Kearney & Trecker Corporation Machine Tools and Attachments illustrated and described in this catalog are protected by issued and pending patents in the United States and foreign countries. Since the manufacturer continuously strives to improve its products, it reserves the right to make changes and modifications without notice.

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